Characterization Data Summary
IHSS Group 700-3

May 2003

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IHSS Group 700-3

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May 2003

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ENCLOSURE

IHSS Group 700-3 Raw Data (Compact Disc)

ACRONYMS

AL	action level
ASD	Analytical Services Division
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
1,1-DCE	1,1 dichlorethene
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HPGe	high-purity germanium
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company, L.L.C.
LCS	laboratory control sample
mg/kg	milligrams per kilogram
MS	matrix spike
MSD	matrix spike duplicate
NA	not applicable
PARCCS	precision, accuracy, representativeness, completeness, comparability, and sensitivity
pCi/g	picocuries per gram
ppb	part per billion
ppm	part per million
QA	quality assurance
QC	quality control
RADMS	Remedial Action Decision Management System
RFETS	Rocky Flats Environmental Technology Site
RIN	report identification number
RL	reporting limit
RPD	relative percent difference
SD	standard deviation
SOP	standard operating procedure
SOR	sum of ratios
SWD	Soil Water Database
UBC	underbuilding contamination
µg/kg	micrograms per kilogram
VOC	volatile organic compound
V&V	verification and validation
XRF	x-ray fluorescence

1.0 INTRODUCTION

This Data Summary report summarizes initial characterization activities conducted at the request of Building 776/777 Decontamination and Decommissioning personnel at the Rocky Flats Environmental Technology Site (RFETS). Additional sampling will be required to make future environmental restoration action decisions. Under building contamination (UBC) for Buildings 776 and 777 is being addressed under Individual Hazardous Substance Site (IHSS) Group 700-3. Characterization activities conducted in accordance with the Industrial Area (IA) Sampling and Analysis Plan (IASAP) (DOE 2001) and IASAP Addendum #IA-02-08 (DOE 2002).

Sampling activities conducted in accordance with IASPAP Addendum # IA-02-08 include two UBC Sites, which are listed in Table 1 and shown on Figure 1. The remainder of IHSS Group 700-3 will be addressed in a separate IASAP Addendum.

No accelerated action decisions were made based on the data collected as part of this project. The subsurface soil risk screen and data quality assessment are not included in this report but these data, their quality, and their impact in the subsurface soil risk screen will be evaluated when additional IHSS Group 700-3 sampling in accordance with IASAP Addendum # IA-03-04 (DOE 2003) is completed.

Table 1
IHSS Group 700-3 Description

IHSS Group	IHSS/PAC/UBC Site
700-3	UBC 776 – Original Plutonium Foundry
	UBC 777 – General Plutonium Research and Development

2.0 SITE CHARACTERIZATION

Information for UBC Sites 776 and 777 consists of historical knowledge (DOE 1992-2001) and data obtained from five additional sampling locations. The sampling specifications are described in IASAP Addendum #IA-02-08 (DOE 2002) and are listed in Table 2. The locations of these samples and analytical results for Rocky Flasts Cleanup Agreement (RFCA)-regulated compounds greater than background mean plus two standard deviations or reporting limits (RL) are presented on Figure 2. A summary of the analytical results for surface soil is presented in Table 3. Summaries of the analytical results for surface and subsurface soil are presented in Tables 4 and 5. Radionuclide SORs are listed in Table 6 and deviations from planned sampling specifications are presented in Table 7. The raw data are enclosed on a compact disc.

Analytical results indicate that arsenic is above background and the RFCA Tier II action level (AL) at one location beneath Building 777. Additionally, 1,1-dichloroethene (1,1-DCE) was detected at concentrations exceeding the RFCA Tier II AL at two locations under Building 776. All other contaminant concentrations are less than RFCA Tier II ALs. No remedial action decisions are being made based on this initial data set.

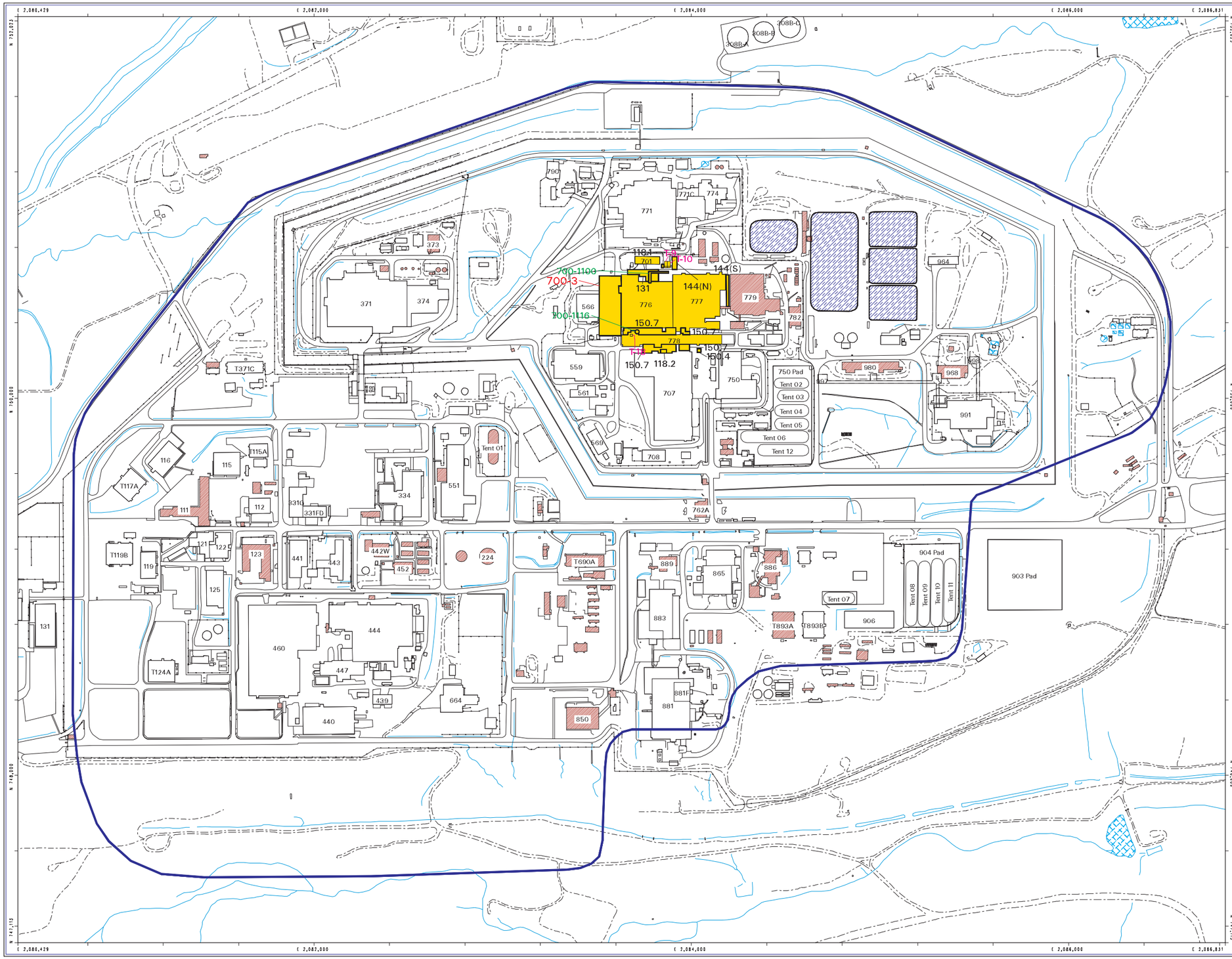


Figure 1

IA Groups Location Map

EXPLANATION

IHSS Groupings

700-3

Standard Map Features

- Buildings and other structures
- Demolished buildings
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads
- Industrial Area Operable Unit Boundary

DATA SOURCE BASE FEATURES:
FACs
Historical Release Report (HRR)
2nd Annual Update
Sept. 30, 1997
Individual Hazardous Substance Sites (IHSS)
DOE, 1992, HRR Report and Subsequent Updates.
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs, 1/95

Scale = 1 : 6330
1 inch represents approximately 528 feet

150 0 300 600ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

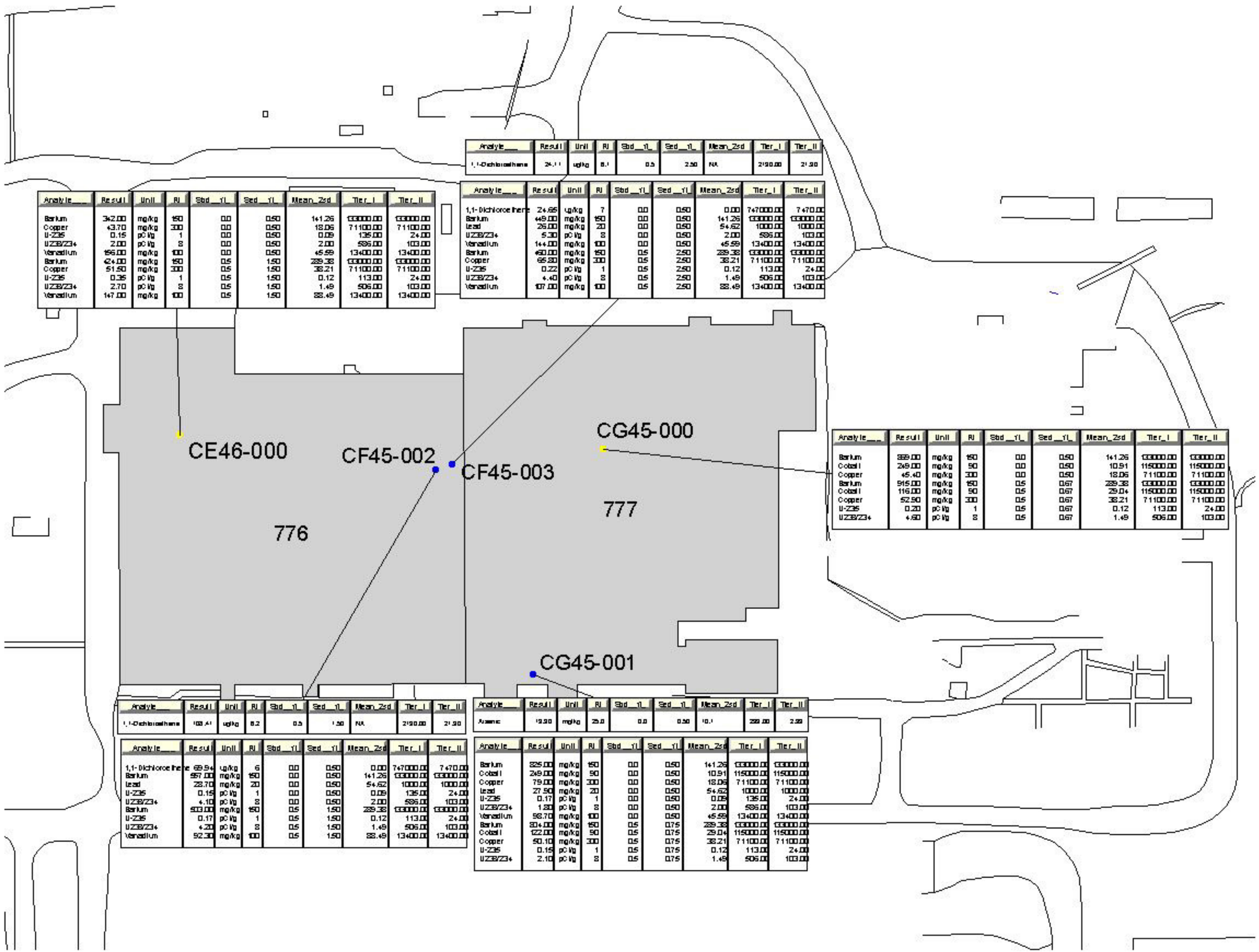
Prepared by: DynCorp THE ART OF TECHNOLOGY

Prepared for: KAISER•HILL COMPANY

August 09, 2002

NT_Svr w:/projects/fy2002/02-0473/ia-700-3.aml

Figure 2
IHSS Group 700-3
Buildings 776 and 777 Soil Results Greater Than Background Mean Plus Two Standard Deviations or Reporting Limits



Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
1,1-Dichloroethane	24.11	ug/kg	8.1	0.5	2.50	NA	2190.00	21.90

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
Barium	342.00	mg/kg	150	0.0	0.50	141.26	130000.00	130000.00
Copper	43.70	mg/kg	300	0.0	0.50	18.06	711100.00	711100.00
U-235	0.15	pCi/g	1	0.0	0.50	0.09	135.00	24.00
U238/234	2.00	pCi/g	8	0.0	0.50	2.00	586.00	103.00
Vanadium	156.00	mg/kg	100	0.0	0.50	45.59	13400.00	13400.00
Barium	424.00	mg/kg	150	0.5	1.50	289.38	130000.00	130000.00
Copper	51.50	mg/kg	300	0.5	1.50	38.21	711100.00	711100.00
U-235	0.35	pCi/g	1	0.5	1.50	0.12	113.00	24.00
U238/234	2.70	pCi/g	8	0.5	1.50	1.49	506.00	103.00
Vanadium	147.00	mg/kg	100	0.5	1.50	88.49	13400.00	13400.00

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
1,1-Dichloroethane	24.65	ug/kg	7	0.0	0.50	0.00	7470000.00	7470.00
Barium	449.00	mg/kg	150	0.0	0.50	141.26	130000.00	130000.00
Lead	28.00	mg/kg	20	0.0	0.50	54.62	1000.00	1000.00
U238/234	5.30	pCi/g	8	0.0	0.50	2.00	586.00	103.00
Vanadium	144.00	mg/kg	100	0.0	0.50	45.59	13400.00	13400.00
Barium	460.00	mg/kg	150	0.5	2.50	289.38	130000.00	130000.00
Copper	65.30	mg/kg	300	0.5	2.50	38.21	711100.00	711100.00
U-235	0.22	pCi/g	1	0.5	2.50	0.12	113.00	24.00
U238/234	4.40	pCi/g	8	0.5	2.50	1.49	506.00	103.00
Vanadium	107.00	mg/kg	100	0.5	2.50	88.49	13400.00	13400.00

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
Barium	559.00	mg/kg	150	0.0	0.50	141.26	130000.00	130000.00
Cobalt	249.00	mg/kg	90	0.0	0.50	10.91	1150000.00	1150000.00
Copper	45.40	mg/kg	300	0.0	0.50	18.06	711100.00	711100.00
Barium	515.00	mg/kg	150	0.5	0.67	289.38	130000.00	130000.00
Cobalt	116.00	mg/kg	90	0.5	0.67	29.04	1150000.00	1150000.00
Copper	52.50	mg/kg	300	0.5	0.67	38.21	711100.00	711100.00
U-235	0.20	pCi/g	1	0.5	0.67	0.12	113.00	24.00
U238/234	4.60	pCi/g	8	0.5	0.67	1.49	506.00	103.00

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
1,1-Dichloroethane	103.41	ug/kg	8.2	0.5	1.50	NA	2190.00	21.90

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
1,1-Dichloroethane	69.94	ug/kg	6	0.0	0.50	0.00	7470000.00	7470.00
Barium	557.00	mg/kg	150	0.0	0.50	141.26	130000.00	130000.00
Lead	28.70	mg/kg	20	0.0	0.50	54.62	1000.00	1000.00
U-235	0.15	pCi/g	1	0.0	0.50	0.09	135.00	24.00
U238/234	4.10	pCi/g	8	0.0	0.50	2.00	586.00	103.00
Barium	503.00	mg/kg	150	0.5	1.50	289.38	130000.00	130000.00
U-235	0.17	pCi/g	1	0.5	1.50	0.12	113.00	24.00
U238/234	4.20	pCi/g	8	0.5	1.50	1.49	506.00	103.00
Vanadium	92.30	mg/kg	100	0.5	1.50	88.49	13400.00	13400.00

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
Arsenic	19.90	mg/kg	25.0	0.0	0.50	10.1	299.00	2.99

Analyte	Result	Unit	RI	Sbd_1L	Sed_1L	Mean_2sd	Tier_I	Tier_II
Barium	825.00	mg/kg	150	0.0	0.50	141.26	130000.00	130000.00
Cobalt	249.00	mg/kg	90	0.0	0.50	10.91	1150000.00	1150000.00
Copper	79.00	mg/kg	300	0.0	0.50	18.06	711100.00	711100.00
Lead	27.50	mg/kg	20	0.0	0.50	54.62	1000.00	1000.00
U-235	0.17	pCi/g	1	0.0	0.50	0.09	135.00	24.00
U238/234	1.80	pCi/g	8	0.0	0.50	2.00	586.00	103.00
Vanadium	98.70	mg/kg	100	0.0	0.50	45.59	13400.00	13400.00
Barium	804.00	mg/kg	150	0.5	0.75	289.38	130000.00	130000.00
Cobalt	122.00	mg/kg	90	0.5	0.75	29.04	1150000.00	1150000.00
Copper	50.10	mg/kg	300	0.5	0.75	38.21	711100.00	711100.00
U-235	0.15	pCi/g	1	0.5	0.75	0.12	113.00	24.00
U238/234	2.10	pCi/g	8	0.5	0.75	1.49	506.00	103.00

Key

- Results greater than Tier II action levels
- Results less than Tier II action levels
- Building
- Streams
- Paved Road

Sbd = Sample Begining Depth

Sed = Sample Ending Depth

RI = Reporting limit

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N W E S

50 0 50 Feet

Scale = 1:1000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RADMS

Prepared for:

KAISER•HILL COMPANY

File: W:\Project\FY2003\700-3\Data Summary Date: 2/17/03

Table 2
IHSS Group 700-3 Proposed Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
700-3	UBC 776 – Original Plutonium Foundry and UBC 777 – General Plutonium Research and Development Biased locations based on process and historical information, including known release/spill sites and features of the building slab (e.g., construction joints and floor cracks where fire water may have migrated to the soil beneath the building).								
	Samples near tunnel in basement	CE46-A000	2083675.523	750570.668	Surface Soil	0-0.5	Radionuclides	HPGe	Alpha Spec
		CE46-A000	2083675.523	750570.668	Surface Soil	0-0.5	Metals	6200	6010
		CE46-A000	2083675.523	750570.668	Surface Soil	0-0.5	VOCs	8260	8260
		CE46-B000	2083675.523	750570.668	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		CE46-B000	2083675.523	750570.668	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		CE46-B000	2083675.523	750570.668	Subsurface Soil	0.5-2.5’	VOCs	8260	8260
	Samples through joint in slab	CF45-A000	2083787.340	750488.432	Surface Soil	0-0.5	Radionuclides	HPGe	Alpha Spec
		CF45-A000	2083787.340	750488.432	Surface Soil	0-0.5	Metals	6200	6010
		CF45-A000	2083787.340	750488.432	Surface Soil	0-0.5	VOCs	8260	8260
		CF45-B000	2083787.340	750488.432	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		CF45-B000	2083787.340	750488.432	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		CF45-B000	2083787.340	750488.432	Subsurface Soil	0.5-2.5’	VOCs	8260	8260
	Samples where first floor slab meets vertical wall for stairwell	CF45-A001	2083886.142	750528.663	Surface Soil	0-0.5	Radionuclides	HPGe	Alpha Spec
		CF45-A001	2083886.142	750528.663	Surface Soil	0-0.5	Metals	6200	6010
		CF45-A001	2083886.142	750528.663	Surface Soil	0-0.5	VOCs	8260	8260
		CF45-B001	2083886.142	750528.663	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec

IHSS Group	IHSS/PAC/UBC Site	Location Code	Easting	Northing	Media	Depth Interval	Analyte	Onsite Method	Offsite Laboratory Method
		CF45-B001	2083886.142	750528.663	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		CF45-B001	2083886.142	750528.663	Subsurface Soil	0.5-2.5’	VOCs	8260	8260
	Samples under basement at Room 127	CF45-A002	2083892.058	750547.003	Surface Soil	0-0.5	Radionuclides	HPGe	Alpha Spec
		CF45-A002	2083892.058	750547.003	Surface Soil	0-0.5	Metals	6200	6010
		CF45-A002	2083892.058	750547.003	Surface Soil	0-0.5	VOCs	8260	8260
		CF45-B002	2083892.058	750547.003	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		CF45-B002	2083892.058	750547.003	Subsurface Soil	0.5-2.5'	Metals	6200	6010
	Samples where Tanks 1 and 2 leaked	CF45-B002	2083892.058	750547.003	Subsurface Soil	0.5-2.5’	VOCs	8260	8260
		CG45-A000	2084012.158	750559.427	Surface Soil	0-0.5	Radionuclides	HPGe	Alpha Spec
		CG45-A000	2084012.158	750559.427	Surface Soil	0-0.5	Metals	6200	6010
		CG45-A000	2084012.158	750559.427	Surface Soil	0-0.5	VOCs	8260	8260
		CG45-B000	2084012.158	750559.427	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		CG45-B000	2084012.158	750559.427	Subsurface Soil	0.5-2.5'	Metals	6200	6010
	Samples where Tanks 1103, 1104, and 1105 leaked	CG45-B000	2084012.158	750559.427	Subsurface Soil	0.5-2.5’	VOCs	8260	8260
		CG45-A001	2083956.545	750379.573	Surface Soil	0-0.5	Radionuclides	HPGe	Alpha Spec
		CG45-A001	2083956.545	750379.573	Surface Soil	0-0.5	Metals	6200	6010
		CG45-A001	2083956.545	750379.573	Surface Soil	0-0.5	VOCs	8260	8260
		CG45-B001	2083956.545	750379.573	Subsurface Soil	0.5-2.5'	Radionuclides	HPGe	Alpha Spec
		CG45-B001	2083956.545	750379.573	Subsurface Soil	0.5-2.5'	Metals	6200	6010
		CG45-B001	2083956.545	750379.573	Subsurface Soil	0.5-2.5’	VOCs	8260	8260

Table 3
IHSS Group 700-3 Soil Results With RFCA Action Levels and Results Greater Than Background Mean Plus Two Standard Deviations or Reporting Limits

UBC	Location	Approximate Easting	Approximate Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background Mean+2SD	Unit
UBC 776	CE46-000	2083675.52	750570.67	Barium	0	0.5	342	150	133000	133000	141.26	mg/kg
UBC 776	CE46-000	2083675.52	750570.67	Copper	0	0.5	43.7	300	71100	71100	18.06	mg/kg
UBC 776	CE46-000	2083675.52	750570.67	Uranium-235	0	0.5	0.15	1	135	24	0.09	pCi/g
UBC 776	CE46-000	2083675.52	750570.67	Uranium-238/Uranium-234	0	0.5	2	8	586	103	2.00	pCi/g
UBC 776	CE46-000	2083675.52	750570.67	Vanadium	0	0.5	156	100	13400	13400	45.59	mg/kg
UBC 776	CE46-000	2083675.52	750570.67	Barium	0.5	1.5	424	150	133000	133000	289.38	mg/kg
UBC 776	CE46-000	2083675.52	750570.67	Copper	0.5	1.5	51.5	300	71100	71100	38.21	mg/kg
UBC 776	CE46-000	2083675.52	750570.67	Uranium-235	0.5	1.5	0.35	1	113	24	0.12	pCi/g
UBC 776	CE46-000	2083675.52	750570.67	Uranium-238/Uranium-234	0.5	1.5	2.7	8	506	103	1.49	pCi/g
UBC 776	CE46-000	2083675.52	750570.67	Vanadium	0.5	1.5	147	100	13400	13400	88.49	mg/kg
UBC 776	CF45-002	2083892.06	750547	1,1-Dichloroethene	0	0.5	24.6	6.7	747000	7470	NA	ug/kg
UBC 776	CF45-002	2083892.06	750547	Barium	0	0.5	449	150	133000	133000	141.26	mg/kg
UBC 776	CF45-002	2083892.06	750547	Lead	0	0.5	26	20	1000	1000	54.62	mg/kg
UBC 776	CF45-002	2083892.06	750547	Uranium-238/Uranium-234	0	0.5	5.3	8	586	103	2.00	pCi/g
UBC 776	CF45-002	2083892.06	750547	Vanadium	0	0.5	144	100	13400	13400	45.59	mg/kg
UBC 776	CF45-002	2083892.06	750547	1,1-Dichloroethene	0.5	2.5	24.1	6.1	2190	21.9	NA	ug/kg
UBC 776	CF45-002	2083892.06	750547	Barium	0.5	2.5	460	150	133000	133000	289.38	mg/kg
UBC 776	CF45-002	2083892.06	750547	Copper	0.5	2.5	65.8	300	71100	71100	38.21	mg/kg
UBC 776	CF45-002	2083892.06	750547	Uranium-235	0.5	2.5	0.22	1	113	24	0.12	pCi/g
UBC 776	CF45-002	2083892.06	750547	Uranium-238/Uranium-234	0.5	2.5	4.4	8	506	103	1.49	pCi/g
UBC 776	CF45-002	2083892.06	750547	Vanadium	0.5	2.5	107	100	13400	13400	88.49	mg/kg
UBC 776	CF45-003	2083879.01	750543.22	1,1-Dichloroethene	0	0.5	69.9	6.2	747000	7470	NA	ug/kg
UBC 776	CF45-003	2083879.01	750543.22	Barium	0	0.5	557	150	133000	133000	141.26	mg/kg
UBC 776	CF45-003	2083879.01	750543.22	Lead	0	0.5	28.7	20	1000	1000	54.62	mg/kg
UBC 776	CF45-003	2083879.01	750543.22	Uranium-235	0	0.5	0.15	1	135	24	0.09	pCi/g
UBC 776	CF45-003	2083879.01	750543.22	Uranium-238/Uranium-234	0	0.5	4.1	8	586	103	2.00	pCi/g

UBC	Location	Approximate Easting	Approximate Northing	Analyte	Depth Start (feet)	Depth End (feet)	Result	Reporting Limit	Tier I Action Level	Tier II Action Level	Background Mean+2SD	Unit
UBC 776	CF45-003	2083879.01	750543.22	1,1-Dichloroethene	0.5	1.5	108.4	6.2	2190	21.9	NA	ug/kg
UBC 776	CF45-003	2083879.01	750543.22	Barium	0.5	1.5	503	150	133000	133000	289.38	mg/kg
UBC 776	CF45-003	2083879.01	750543.22	Uranium-235	0.5	1.5	0.17	1	113	24	0.12	pCi/g
UBC 776	CF45-003	2083879.01	750543.22	Uranium-238/Uranium-234	0.5	1.5	4.2	8	506	103	1.49	pCi/g
UBC 776	CF45-003	2083879.01	750543.22	Vanadium	0.5	1.5	92.3	100	13400	13400	88.49	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Barium	0	0.5	869	150	133000	133000	141.26	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Cobalt	0	0.5	249	90	115000	115000	10.91	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Copper	0	0.5	45.4	300	71100	71100	18.06	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Barium	0.5	0.67	915	150	133000	133000	289.38	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Cobalt	0.5	0.67	116	90	115000	115000	29.04	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Copper	0.5	0.67	52.9	300	71100	71100	38.21	mg/kg
UBC 777	CG45-000	2084012.16	750559.43	Uranium-235	0.5	0.67	0.2	1	113	24	0.12	pCi/g
UBC 777	CG45-000	2084012.16	750559.43	Uranium-238/Uranium-234	0.5	0.67	4.6	8	506	103	1.49	pCi/g
UBC 777	CG45-001	2083956.55	750379.57	Arsenic	0	0.5	13.3	25	299	2.99	10.09	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Barium	0	0.5	825	150	133000	133000	141.26	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Cobalt	0	0.5	249	90	115000	115000	10.91	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Copper	0	0.5	79	300	71100	71100	18.06	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Lead	0	0.5	27.9	20	1000	1000	54.62	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Uranium-235	0	0.5	0.17	1	135	24	0.09	pCi/g
UBC 777	CG45-001	2083956.55	750379.57	Uranium-238/Uranium-234	0	0.5	1.8	8	586	103	2.00	pCi/g
UBC 777	CG45-001	2083956.55	750379.57	Vanadium	0	0.5	98.7	100	13400	13400	45.59	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Barium	0.5	0.75	804	150	133000	133000	289.38	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Cobalt	0.5	0.75	122	90	115000	115000	29.04	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Copper	0.5	0.75	50.1	300	71100	71100	38.21	mg/kg
UBC 777	CG45-001	2083956.55	750379.57	Uranium-235	0.5	0.75	0.15	1	113	24	0.12	pCi/g
UBC 777	CG45-001	2083956.55	750379.57	Uranium-238/Uranium-234	0.5	0.75	2.1	8	506	103	1.49	pCi/g

Table 4
IHSS Group 700-3 Summary of Analytical Results for Surface Soils

Analyte	Total Number of Samples Analyzed	Detection Frequency (%)	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
Antimony	5	0	0	0	mg/kg	768	768	NA
Arsenic	5	80	13.3	7.07	mg/kg	299	2.99	10.09
Barium	5	100	869	608.4	mg/kg	133000	133000	141.26
Cadmium	5	0	0	0	mg/kg	1920	1920	1.61
Chromium	5	100	43.6	35.02	mg/kg	44300	4410	16.99
Cobalt	5	40	249	99.6	mg/kg	115000	115000	10.91
Copper	5	100	79	45.46	mg/kg	71100	71100	18.06
Iron	5	100	35400	25300	mg/kg	576000	576000	18037.00
Lead	5	100	28.7	23.36	mg/kg	1000	1000	54.62
Manganese	5	80	516	283.8	mg/kg	83600	83600	365.08
Molybdenum	5	0	0	0	mg/kg	9610	9610	NA
Nickel	5	100	47.8	31.04	mg/kg	38400	38400	14.91
Selenium	5	0	0	0	mg/kg	9610	9610	1.22
Silver	5	0	0	0	mg/kg	9610	9610	NA
Strontium	5	100	208	144.92	mg/kg	1000000	1000000	48.94
Tin	5	0	0	0	mg/kg	1000000	1000000	NA
Vanadium	5	100	156	110.36	mg/kg	13400	13400	45.59
Zinc	5	100	110	79.46	mg/kg	576000	576000	73.76
1,1,1-Trichloroethane	4	0	0.705	0.62	ug/kg	38400000	38400000	NA
1,1,2,2-Tetrachloroethane	4	0	0.62	0.54	ug/kg	2240000	22400	NA
1,1,2-Trichloroethane	4	0	0.595	0.52	ug/kg	31400000	78600	NA
1,1-Dichloroethane	4	25	2.36	1.00	ug/kg	192000000	192000000	NA
1,1-Dichloroethene	4	25	69.94	24.03	ug/kg	747000	7470	NA
1,2,4-Trichlorobenzene	4	0	0.62	0.55	ug/kg	19200000	19200000	NA
1,2-Dichloroethane	4	0	0.64	0.56	ug/kg	4930000	49300	NA
1,2-Dichlorobenzene	4	0	0.47	0.41	ug/kg	173000000	173000000	NA
1,2-Dichloropropane	4	0	0.55	0.48	ug/kg	6590000	65900	NA

Analyte	Total Number of Samples Analyzed	Detection Frequency (%)	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
1,4-Dichlorobenzene	4	0	0.71	0.63	ug/kg	18700000	187000	NA
2-Butanone	4	0	6.4	5.68	ug/kg	1000000000	1000000000	NA
4-Methyl-2-Pentanone	4	0	4.33	3.84	ug/kg	154000000	154000000	NA
Acetone	4	25	13.18	7.49	ug/kg	192000000	192000000	NA
Benzene	4	0	0.52	0.46	ug/kg	15500000	155000	NA
Bromodichloromethane	4	0	0.4385	0.38	ug/kg	72300	72300	NA
Bromoform	4	0	0.71	0.63	ug/kg	567000	567000	NA
Bromomethane	4	0	1.02	0.91	ug/kg	2690000	2690000	NA
Carbon disulfide	4	0	1.765	1.57	ug/kg	192000000	192000000	NA
Carbon tetrachloride	4	0	0.75	0.665	ug/kg	3450000	34500	NA
Chlorobenzene	4	0	0.63	0.56	ug/kg	38400000	38400000	NA
Chloroethane	4	0	2.49	2.21	ug/kg	155000000	1550000	NA
Chloroform	4	0	0.57	0.51	ug/kg	73500000	735000	NA
Chloromethane	4	0	0.895	0.79	ug/kg	34500000	345000	NA
Dibromochloromethane	4	0	0.465	0.41	ug/kg	5340000	53400	NA
Ethylbenzene	4	0	0.68	0.60	ug/kg	192000000	192000000	NA
Hexachlorobutadiene	4	0	0.79	0.70	ug/kg	5750000	57500	NA
Methylene chloride	4	0	0.71	0.63	ug/kg	239000000	598000	NA
Naphthalene	4	0	0.525	0.47	ug/kg	76800000	76800000	NA
Styrene	4	0	0.665	0.59	ug/kg	384000000	384000000	NA
Trichloroethene	4	0	0.423	0.38	ug/kg	163000000	407000	NA
Tetrachloroethene	4	0	0.81	0.72	ug/kg	8620000	86200	NA
Toluene	4	0	0.84	0.74	ug/kg	384000000	384000000	NA
Trans-1,3-Dichloropropene	4	0	0.595	0.53	ug/kg	2490000	24900	NA
Vinyl chloride	4	0	1.875	1.66	ug/kg	236000	2360	NA
Xylenes (total)	4	0	1.665	1.48	ug/kg	1000000000	1000000000	NA
Americium-241	5	0	0	0	pCi/g	215	38	0.02
Uranium-235	5	60	0.085	0.05	pCi/g	135	24	0.09
Uranium-238	5	100	2.65	1.42	pCi/g	586	103	2.00

Table 5
IHSS Group 700-3 Summary of Analytical Results for Subsurface Soils

Analyte	Total Number Samples Analyzed	Detection Frequency (%)	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
Antimony	5	0	0	0	mg/kg	768	768	16.97
Arsenic	5	80	12.7	7.39	mg/kg	299	2.99	13.14
Barium	5	100	915	621.2	mg/kg	133000	133000	289.38
Cadmium	5	0	0	0	mg/kg	1920	1920	1.7
Chromium	5	100	44.5	37.14	mg/kg	44300	4410	68.27
Cobalt	5	40	122	47.6	mg/kg	115000	115000	29.04
Copper	5	100	65.8	49.88	mg/kg	71100	71100	38.21
Iron	5	100	31900	25520	mg/kg	576000	576000	41046.52
Lead	5	100	23.1	19.58	mg/kg	1000	1000	24.97
Manganese	5	40	522	188.2	mg/kg	83600	83600	901.62
Molybdenum	5	0	0	0	mg/kg	9610	9610	25.61
Nickel	5	100	41.3	31.04	mg/kg	38400	38400	62.21
Selenium	5	0	0	0	mg/kg	9610	9610	4.8
Silver	5	0	0	0	mg/kg	9610	9610	24.54
Strontium	5	100	195	139.1	mg/kg	1000000	1000000	211.38
Tin	5	40	5.14	1.89	mg/kg	1000000	1000000	286.31
Vanadium	5	100	147	98.16	mg/kg	13400	13400	88.49
Zinc	5	100	91.2	76.48	mg/kg	576000	576000	139.1
1,1,1-Trichloroethane	4	0	0.65	0.61	ug/kg	94800	948	NA
1,1,2,2-Tetrachloroethane	4	0	0.575	0.54	ug/kg	168	1.68	NA
1,1,2-Trichloroethane	4	0	0.555	0.52	ug/kg	1230	12.3	NA
1,1-Dichloroethane	4	25	3.0	1.14	ug/kg	689000	6890	NA
1,1-Dichloroethene	4	50	108.41	33.52	ug/kg	2190	21.9	NA
1,2,4-Trichlorobenzene	4	0	0.575	0.54	ug/kg	433000	4330	NA
1,2-Dichloroethane	4	0	0.595	0.56	ug/kg	668	6.68	NA
1,2-Dichlorobenzene	4	0	0.4355	0.41	ug/kg	1320000	13200	NA
1,2-Dichloropropane	4	0	0.51	0.48	ug/kg	1130	11.3	NA

Analyte	Total Number Samples Analyzed	Detection Frequency (%)	Maximum Concentration	Average Concentration	Unit	Tier I Action Level	Tier II Action Level	Background Mean+2SD
1,4-Dichlorobenzene	4	0	0.66	0.62	ug/kg	165000	1650	NA
Acetone	4	50	17.07	10.02	ug/kg	27200000	272000	NA
Benzene	4	0	0.485	0.45	ug/kg	1410	14.1	NA
Bromodichloromethane	4	0	0.4065	0.38	ug/kg	26400	264	NA
Bromoform	4	0	0.66	0.62	ug/kg	37200	372	NA
Bromomethane	4	0	0.95	0.89	ug/kg	5980	59.8	NA
Carbon disulfide	4	0	1.64	1.539	ug/kg	988000	9880	NA
Carbon tetrachloride	4	0	0.695	0.66	ug/kg	3560	35.6	NA
Chlorobenzene	4	0	0.585	0.56	ug/kg	83000	830	NA
Chloroform	4	0	0.53	0.49	ug/kg	21400	214	NA
Ethylbenzene	4	0	0.63	0.59	ug/kg	932000	9320	NA
Hexachlorobutadiene	4	0	0.735	0.69	ug/kg	201000	2010	NA
Methylene chloride	4	0	0.665	0.62	ug/kg	578	5.78	NA
Naphthalene	4	0	0.4885	0.46	ug/kg	10100000	101000	NA
Styrene	4	0	0.62	0.58	ug/kg	274000	2740	NA
Trichloroethene	4	0	0.3925	0.37	ug/kg	3280	32.8	NA
Tetrachloroethene	4	0	0.75	0.70	ug/kg	3150	31.5	NA
Toluene	4	0	0.775	0.73	ug/kg	707000	7070	NA
Trans-1,3-Dichloropropene	4	0	0.555	0.52	ug/kg	120	1.2	NA
Vinyl chloride	4	0	1.735	1.63	ug/kg	346	3.46	NA
Xylenes (total)	4	0	1.545	1.45	ug/kg	9740000	97400	NA
Americium-241	5	0	0	0	pCi/g	209	38	0.02
Uranium-235	5	100	0.175	0.11	pCi/g	113	24	0.12
Uranium-238	5	100	2.3	1.8	pCi/g	506	103	1.49

Table 6
IHSS Group 700-3 Radionuclide Sum of Ratios

Location	Beginning Depth (ft)	Ending Depth (ft)	Tier I SOR	Tier II SOR
CG45-001	0	0.5	0.0054	0.0304
CG45-001	0.5	0.75	0.0067	0.0335
CG45-000	0.5	0.67	0.0135	0.0680
CF45-003	0	0.5	0.0105	0.0594
CF45-003	0.5	1.5	0.0122	0.0615
CF45-002	0	0.5	0.0121	0.0687
CF45-002	0.5	2.5	0.0132	0.0662
CE46-000	0	0.5	0.0057	0.0322
CE46-000	0.5	1.5	0.0100	0.0496

3.0 DEVIATIONS FROM PLANNED SAMPLING SPECIFICATIONS

Deviations from the planned sampling specifications described in IASAP Addendum #IA-02-08 (DOE 2002) are presented in Table 7.

Table 7
IHSS Group 700-3 Deviations From Planned Sampling Specifications

Location Code	Comments
All	Sampling locations not surveyed due to building walls, structures, various obstructions, etc. Approximate locations provided.
CE46-000	Sample interval 0.5 - 2.5 feet terminated at 1.5 feet due to auger refusal. VOC samples not collected from 0 - 0.5 or 0.5 -1.5 foot intervals.
CF45-000	No samples collected due to refusal.
CF45-001	No samples collected due to refusal.
CF45-002	Sample interval 0.5 -2.5 feet terminated at 1.5 feet due to auger refusal.
CF45-003	Location added by Building 776/777 personnel.
CG45-000	Sample interval 0.5 -2.5 feet terminated at 0.67 foot due to auger refusal.
CG45-001	Sample interval 0.5 -2.5 feet terminated at 0.75 foot due to auger refusal.

4.0 REFERENCES

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ENCLOSURE

IHSS GROUP 700-3 RAW DATA